CLAIMS

What is claimed is:

1. A connector comprising:

a housing defining a first threaded portion and a second threaded portion, wherein the first threaded portion comprises a first pitch that is coarser than a second pitch of the second threaded portion; and

a locking ring defining a thread engagement member,

wherein the thread engagement member engages the first threaded portion and the second threaded portion to secure the locking ring to the housing with a varying amount of axial travel per rotation of the locking ring that corresponds with the first pitch of the first threaded portion and the second pitch of the second threaded portion.

2. The connector of Claim 1, wherein the thread engagement member comprises two radial protrusions that engage the first threaded portion and the second threaded portion.

3. The connector of Claim 2, wherein the two radial protrusions are diametrically opposed.

4. The connector of Claim 2 further comprising at least one thread protrusion disposed within the second threaded portion such that at least one radial protrusion engages the thread protrusion to provide an audible and tactile indication of a fully mated condition.

5. The connector of Claim 4 further comprising a lateral stop disposed at an end of the second threaded portion to limit travel of the locking ring.

6. The connector of Claim 2 further comprising two thread protrusions disposed within the second threaded portion such that the two radial protrusions engage the two thread protrusions to provide an audible and tactile indication of a fully mated condition.

7. The connector of Claim 6 further comprising a lateral stop disposed at an end of the second threaded portion to limit travel of the locking ring.

8. The connector of Claim 1 further comprising at least one thread protrusion disposed within the second threaded portion such that the thread engagement member engages the thread protrusion to provide an audible and tactile indication of a fully mated condition.

9. The connector of Claim 1 further comprising a lateral stop disposed at an end of the second threaded portion to limit travel of the locking ring.

10. The connector of Claim 1, wherein the locking ring further comprises an exterior surface defining a plurality of axial ridges for gripping the locking ring during operation.

11. A housing for use in a connector, the housing comprising:

a first threaded portion defining a first pitch; and

a second threaded portion defining a second pitch,

wherein a component engages the first threaded portion and the second threaded portion to secure the component to the housing with a varying amount of axial travel per rotation of the component that corresponds with the first pitch and the second pitch.

12. The housing of Claim 11 further comprising at least one thread protrusion disposed within the second threaded portion such that the component engages the thread protrusion to provide an audible and tactile indication of a fully mated condition.

13. The connector of Claim 11 further comprising a lateral stop disposed at an end of the second threaded portion to limit travel of the component.

14. A socket housing for use in a plasma arc apparatus comprising:

a first threaded portion defining a first pitch; and

a second threaded portion defining a second pitch,

wherein a component engages the first threaded portion and the second threaded portion to secure the component to the socket housing with a varying amount of axial travel per rotation of the component that corresponds with the first pitch and the second pitch.

15. The housing of Claim 14 further comprising at least one thread protrusion disposed within the second threaded portion such that the component engages the thread protrusion to provide an audible and tactile indication of a fully mated condition.

16. The connector of Claim 14 further comprising a lateral stop disposed at an end of the second threaded portion to limit travel of the component.

17. A locking ring for use in a connector, the locking ring comprising:

a thread engagement member,

wherein the thread engagement member engages threaded portions of a component to secure the locking ring to the component with a varying amount of axial travel per rotation of the locking ring that corresponds with varying pitches of the threaded portions.

18. The locking ring of Claim 17, wherein the thread engagement member comprises two radial protrusions that engage the threaded portions of the component.

19. The locking ring of Claim 18, wherein the two radial protrusions are diametrically opposed.

20. The locking ring of Claim 17 further comprising an exterior surface defining a plurality of axial ridges for gripping the locking ring during operation.

21. A locking ring for use in a connector for a plasma arc apparatus comprising:

a thread engagement member,

wherein the thread engagement member engages threaded portions of a component to secure the locking ring to the component with a varying amount of axial travel per rotation of the locking ring that corresponds with varying pitches of the threaded portions.

22. The locking ring of Claim 21, wherein the thread engagement member comprises two radial protrusions that engage the threaded portions of the component.

23. The locking ring of Claim 22, wherein the two radial protrusions are diametrically opposed.

24. The locking ring of Claim 21 further comprising an exterior surface defining a plurality of axial ridges for gripping the locking ring during operation.

25. A fluid and electric connector for use in a plasma arc apparatus comprising:

a housing defining at least one threaded portion;

at least one thread protrusion disposed within the threaded portion; and

a locking ring defining a thread engagement member,

wherein the thread engagement member engages the thread protrusion to provide an audible and tactile indication of a fully mated condition.

26. The connector of Claim 25 further comprising two thread protrusions, wherein the thread engagement member engages the two thread protrusions.

27. The connector of Claim 25, wherein the thread protrusion defines first and second sloped surfaces such that the thread engagement member passes over the first and second sloped surfaces to facilitate engagement with the thread protrusion.

28. The connector of Claim 25 further comprising a lateral stop disposed at an end of the threaded portion to limit travel of the locking ring.

29. A connector comprising:

a housing defining multiple threaded portions extending along a length of the housing, wherein each successive threaded portion along the length comprises a pitch that is different than a pitch of a previous threaded portion; and

a locking ring defining a thread engagement member,

wherein the thread engagement member engages the multiple threaded portions to secure the locking ring to the housing with a varying amount of axial travel per rotation of the locking ring that corresponds with the pitches of the multiple threaded portions.

30. The connector of Claim 29, wherein the thread engagement member comprises two radial protrusions that engage the multiple threaded portions.

31. The connector of Claim 30, wherein the two radial protrusions are diametrically opposed.

32. The connector of Claim 30 further comprising at least one thread protrusion disposed within a threaded portion such that at least one radial protrusion engages the thread protrusion to provide an audible and tactile indication of a fully mated condition.

33. The connector of Claim 32 further comprising a lateral stop disposed at an end of a threaded portion to limit travel of the locking ring.

34. The connector of Claim 30 further comprising two thread protrusions disposed within a threaded portion such that the two radial protrusions engage the two thread protrusions to provide an audible and tactile indication of a fully mated condition.

35. The connector of Claim 34 further comprising a lateral stop disposed at an end of a threaded portion to limit travel of the locking ring.

36. The connector of Claim 29 further comprising at least one thread protrusion disposed within a threaded portion such that the thread engagement member engages the thread protrusion to provide an audible and tactile indication of a fully mated condition.

37. The connector of Claim 29 further comprising a lateral stop disposed at an end of a threaded portion to limit travel of the locking ring.

38. The connector of Claim 29, wherein the locking ring further comprises an exterior surface defining a plurality of axial ridges for gripping the locking ring during operation.

40. The connector of Claim 29, wherein the thread engagement member is internal to the locking ring and the multiple threaded portions are external to the housing.

41. The connector of Claim 29, wherein the thread engagement member is external to the locking ring and the multiple threaded portions are internal to the housing.

42. A connector comprising:

a housing defining a first threaded portion and a second threaded portion, wherein the first threaded portion comprises a first pitch that is coarser than a second pitch of the second threaded portion;

two thread protrusions disposed within the second threaded portion; and

a locking ring defining a thread engagement member, the thread engagement member comprising two diametrically opposed radial protrusions,

wherein the radial protrusions engage the first threaded portion and the second threaded portion to secure the locking ring to the housing with a varying amount of axial travel per rotation of the locking ring that corresponds with the first pitch of the first threaded portion and the second pitch of the second threaded portion, and the radial protrusions engage the thread protrusions to provide an audible and tactile indication of a fully mated condition.

43. A connector comprising:

a first component defining a thread engagement member; and

a second component defining multiple threaded portions, wherein each successive threaded portion comprises a pitch that is different than a pitch of a previous threaded portion,

wherein the thread engagement member engages the multiple threaded portions to secure the first component to the second component with a varying amount of axial travel per rotation of the first component that corresponds with the pitches of the multiple threaded portions.

44. The connector of Claim 43, wherein the thread engagement member is internal to the first component and the multiple threaded portions are external to the second component.

45. The connector of Claim 43, wherein the thread engagement member is external to the first component and the multiple threaded portions are internal to the second component.

46. The connector of Claim 43 further comprising at least one thread protrusion disposed within a threaded portion such that the thread engagement member engages the thread protrusion to provide an audible and tactile indication of a fully mated condition.

47. The connector of Claim 43 further comprising a lateral stop disposed at an end of a threaded portion to limit travel of the first component.

48. A method of connecting two components, the method comprising the steps of:

(a) engaging a first component comprising a thread engagement member with a second component comprising multiple threaded portions extending along a length of the second component, wherein each successive threaded portion along the length comprises a pitch that is different than a pitch of a previous threaded portion; and

(b) rotating the first component such that the thread engagement member engages the multiple threaded portions,

wherein the thread engagement member engages the multiple threaded portions to secure the first component to the second component with a varying amount of axial travel per rotation of the first component that corresponds with the pitches of the multiple threaded portions.

49. The method of Claim 48 further comprising the step of:

rotating the first component until the thread engagement member engages a thread protrusion within a threaded portion,

wherein an audible and tactile indication of a fully mated condition occurs.

50. The method of Claim 49 further comprising the step of:

rotating the first component until the thread engagement member engages a lateral stop at an end of a threaded portion,

wherein travel of the first component is limited by the lateral stop.